Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Revitalization of the AM Radio Service	)	
First Report And Order, Further Notice of Proposed Rule Making and Notice of Inquiry	)	MB Docket No. 13-249
	)	

To: The Commission

COMMENTS OF COMMUNICATIONS TECHNOLOGIES, INC.

Communications Technologies, Inc. (CTI), pursuant to the FCC Rule Section 1.401, submits its Comments to the above captioned Notice of Proposed Rule Making ("NPRM") wherein the FCC seeks to investigate possible changes to its rules which would allow AM broadcasters to better serve the public.

Introduction

CTI is a broadcast engineering consulting firm located in Marlton, New Jersey. The firm was established in 1985 and has clients who are both commercial and non-commercial licensees of AM, FM and TV stations throughout the United States. The Radio Frequency (RF) portions of Rule Making and applications filed by clients with the FCC are regularly completed by CTI. Throughout its history the firm has been active in AM Broadcast engineering including assisting clients in the filing of Comments and Reply Comments in this proceeding and in MM Docket No. 87-267, the Commission's last comprehensive review of the regulatory areas which affect the AM Service.

CTI believes that a number of the proposals found in the current NPRM hold significant potential benefit for AM stations as they could lead to stronger day and night signals which are needed to overcome interference levels that continue to increase with each passing year. CTI offers its comments regarding items in the NPRM in the following paragraphs and then addresses other aspects of the AM Broadcast Service which are believed important to consider. Paragraph numbers referenced in the following Comments are those found in the Public Notice Released October 23, 2015.

Section A. Modify AM Protection Standards

At paragraph 49 the FCC introduces the subject of modification of the AM protection standards. At paragraph 56 the FCC proposes the following changes to the protection standards for Class A stations:

> "We tentatively conclude, therefore, that (1) all Class A stations should be protected, both day and night, to their 0.1 mV/m groundwave contour, from co-channel stations; (2) all Class A stations should continue to be protected to the 0.5 mV/m groundwave contour, both day and night, from first adjacent channel stations; and (3) the critical hours protection of Class A stations should be eliminated completely."

CTI believes, as stated by other commenters in this proceeding, that the existing level of electrical interference in the AM band makes a 0.1 mV/m signal nearly impossible to listen to in most areas and therefore believes that the limit of protected service, both day and night, for Class A stations should be the 0.5 mV/m ground wave contour for co-ch operation. Class A stations should be protected to the 2 mV/m contour by 1st adjacent channel stations, the 25 mV/m contour by second adjacent channel stations and the third adjacent channel protection requirement should be deleted. CTI concurs with the Commission's recommendation that critical-hours protection for Class A stations should be completely eliminated. These changes are generally consistent with the changes proposed in the NPRM by the Commission for Class B, C and D stations. As much uniformity as possible is believed to be an orderly and reasonable approach and should improve efficient use of the band.

Further, CTI believes that there are a plethora of program choices available via FM radio, satellite radio, over Wi-Fi and internet and cellular radio handsets today which are not local and therefore directly compete with the so called "service" offered by Class A station nighttime skywave signals. These services offer superior fidelity when compared to Class A station skywave service and sharply contrast with the sporadic and regularly fading nature of skywave service provided by Class A stations. It is reasonable to believe that if Class A skywave service were to be deleted that the public interest would be better served by the many local stations that would be able to meet the needs of communities that are currently deprived of any local nighttime AM service opportunity because of the current Class A skywave protection requirements.

Section A. 2. Change Nighttime RSS Calculation Methodology

At paragraph 62 the Commission proposes modified nighttime protection standards which are much more in keeping with the nighttime allocation rules employed by our neighbors in Canada and Mexico:

> "We therefore tentatively conclude that we should roll back the 1991 rule changes as they pertain to calculation of nighttime RSS values of interfering field strengths and nighttime interference free service. We propose to amend Section 78.182(k) of the Rules to return to predicting the nighttime interference-free coverage area using only the interference contributions from co-channel stations and the 50 percent exclusion method."

CTI wholeheartedly supports the removal of adjacent channel protection requirements in the calculation of nighttime interference and protection of station nighttime service based on the 50% RSS. The Commission itself offers a most powerful reason for making this change when it states "… the rules have impeded facility improvements that are more necessary now than 24 years ago, because the noise floor has increased as much as or more than station-to-station interference, and increasing signal strength to a station's primary service area has become more of a priority than maintenance of rules that offer a small return on interference reduction, compared to the burden they impose on signal improvement."

Section A. 3. Change Daytime Protection to Class B, C and D Stations

At paragraphs 63 - 65 the FCC proposes to maintain the current 26 dB D/U daytime co-ch protection ratio and return to the 0 dB D/U 1st and 2nd adjacent channel protection ratio in place prior to 1991 and remove 3rd adjacent channel protection requirements. The daytime contour to be protected would be the 2 mV/m contour for co and first adjacent channel stations and the 25 mV/m contour for 2nd adjacent channel stations.

CTI supports these changes with one exception. It does believe that Class A stations should be protected as is proposed in these paragraphs for Class B, C and D stations on 1st adjacent and 2nd adjacent channels but be protected to the 0.5 mV/m contour by other co-channel stations.

Summary of Daytime Proposed Allocation Changes to be found in 73.37(a)

FCC Rule Section 73.37(a) as recommended is found in the table below.

Revise paragraph (a) of Section 73.37 to read as follows:

§ 73.37 Applications for broadcast facilities, showing required.

(a) * * *

Frequency Separation (kHz)	Contour of proposed station (classes B, C and D) (mV/m)	Contour of any other station (mV/m)
0	0.025 0.100 2.0	0.500 (Class A) 2.0 (Other classes) 0.100 (Other classes)
10	2.0 2.0	2.0 (Class A) 2.0 (Other classes)
20	25.0	25.0 (All classes)

7

Daytime and Night Proposed Allocation Changes as Found in 73.182(o)

The above changes can be summarized by reference to Rule Section 73.182(o) which should look like this:

Class of station	Class of channel used	Signal strength contour of area protected from objectionable interference (μV/m)		Permissible interfering signal (μV/m)	
		Day - GW	Night - GW	Day-GW	Night
A	Clear	SC 500 AC 2000	SC 500 AC 2000	SC 25 AC 2000	SC 25 SW AC 2000 GW
B	Regional	2000	2500 or NIF if >	SC 100 AC 2000	20:1 10%SW Not presc.
C	Local	2000	Not presc.	SC 100	Not presc.
D	Regional	2000	Not presc.	SC 100 AC 2000	Not presc. Not presc.

Section B. Revise Rule on Siting of FM Cross-Service Fill-In Translators

CTI supports the Commission's position as found in paragraph 68 with respect to keeping the fill-in cross-service translator service area within the core market area of the AM station while also recognizing that the current rule prevents, in a number of cases, FM translator service from reaching the area currently served by the AM 2 mV/m contour. The FCC's proposal to Extend the translator 60 dBu contour radius to 64 kilometers is a step in the right direction but it does not fully account for the high conductivity found predominantly in the middle of the country and the needs of those stations.

For example, a 15 conductivity stretches through much of the central U.S. from the Mexican border to the Canadian border. An AM power level of 5 kW with a standard 90 degree quarter wave tower produces the following distance to 2 mV/m contour:

540 kHz	146 kM
1000 kHz	84
1600 kHz	52

An FM translator's 60 dBu coverage contour, even under the best circumstances, assuming a maximum powered translator (250 watts) with an antenna center 2,000 feet HAAT (610 meters), would extend out 33 kilometers. However, the translator may enjoy a listenable signal out to the 34 dBu contour which could extend out 92 kilometers from the translator transmitter site. Thus, even if the proposed rule modification were expanded to a 40 mile radius, as suggested, changing the rule to recognize the even greater practical extent of service that an FM translator can provide, and that is needed in many areas of the country, would provide greater flexibility to AM operators to locate their FM translators in locations which they determine would best serve their "core" audience. It is believed that allowing the translator 60 dBu to extend out a maximum of 60 miles, or 96 kilometers from the AM transmitter site, as long as it remains in the 2 mV/m contour is an optimum, and more valuable, change to 74.1201(g). This change would be reflected in 74.1201(g) as follows:

Rule Section 74.1201(g) Proposed language

(g) * * * The coverage contour of an FM translator rebroadcasting an AM radio broadcast station as its primary station must be contained within the greater of either the 2 mV/m daytime contour of the AM station or a 40 mile (64 km) radius centered at the AM transmitter site, but the translator's 1 mV/m coverage contour may not extend beyond a 60-mile (96 km) radius centered at the AM transmitter site. The protected contour for an FM translator station is its predicted 1 mV/m contour.

Section C. Modify Partial Proof of Performance Rules

At paragraph 70 the Commission proposes to modify section 73.154(a) to reduce the number of required radials to be measured believing that this change will not result in AM directional antenna systems being out of adjustment as a result of this change. CTI agrees with the Commission's conclusion that reducing the number of radials should not result in interference or improper adjustment of directional antenna systems and therefore supports the proposed change.

Section D. Modify Rules for Method of Moments Proofs

At paragraph 72 the Commission lists seven changes to the MoM Proof Rules which are based on years of processing MoM license applications and commenter's input. At paragraph 73 the FCC proposes to implement the seven procedural and rule change relaxations with the exception of the elimination of reference field strength measurements. CTI believes that the cost and time associated with some of the recertification procedures is no longer warranted as the passage of time has increased confidence in MoM licensing and the changes can be made without detriment to the licensee or to other stations. With regard to Section 73.151(c)(3), it is believed that maintaining the requirement for reference field strength measurements, when the initial license application is filed, should be maintained in the rules as a basic external proof of pattern shape. Because physical environments do change over time it is suggested that the recertification portion of the rule be changed to require recertification measurements once every five years instead of the current two year interval.

With regard to modeling of skirt-fed towers, we feel that the use of MoM has progressed to the point that including skirt feeds is appropriate. Specification of a particular MoM software should not be undertaken. As long as the model data is calibrated against measured impedance and the current distribution is shown to be reasonable there should be no reason to question the software used. Further, limiting the software types to be used could prevent new software implementations with potentially greater accuracy from being employed. That outcome would be a disservice to both the FCC and the industry. Currently NEC-2, NEC-4 and Mininec are all in use with different engineers preferring one to the other.

Lawrence Livermore Labs released NEC-4.2 in May 2012 for purposes of improving performance calculations over real earth and removing memory size limitations. This is but one example of the need to encourage new software and not limit software capabilities. As time passes perhaps the Commission will be open to considering true earth calculations rather than perfect earth especially for more complicated antenna system designs.

Section V. B. Relaxed Main Studio Requirements

At paragraph 87 the Commission cites the historical need for a main studio as the vehicle by which a station serves the needs and interests of those residing in the station's community of license. Arguably stations which serve the needs of its community and surrounding area have loyal listenership and enjoy the support of the community. If serving the community is the goal then perhaps the question should be "how does a station best serve its community and listeners in the 21st century" instead of "what are the main studio requirements?" When looked at in this way it may be seen that a "main studio" presence and/or a "local management presence" are not necessarily associated with successful service to the community of license and surrounding service area.

FM Translator Interference – Further NPRM

Clients have told us that once they have implemented an FM translator for their AM station that listening to the station's translator steadily increases while AM station listening decreases. As greater numbers of AM stations come to rely on FM translators, it would seem that these stations require some level of protection to their FM signal beyond what the current rules allow. FCC Rule Section 74.1203(a)(3) states, in part, the following:

> "…Interference will be considered to occur whenever reception of a regularly used signal is impaired by the signals radiated by the FM translator or booster station, regardless of the quality of such reception, the strength of the signal so used, or the channel on which the protected signal is transmitted."

This somewhat subjective description of interference is believed to require significant FCC staff time to evaluate and process interference complaints. CTI, finds itself being approached more and more frequently by existing licensees of both full service and FM translator facilities that are fearful of interference from proposed new translators or are experiencing interference. On the flip side some parties are using the interference language in petitions asking that proposed FM translator applications for construction permit be dismissed with little or no properly substantiated listener expectation of lost coverage.

Implementation of a specific interference calculation methodology would benefit stations, the public and FCC staff by providing a level of certainty as to what is interference and what is not. A number of years ago the FCC developed the OET-69 methodology for use in determining interference between LPTV and full service stations. Real world terrain data and Longley-Rice signal level prediction are employed to determine where a station has actual coverage and interference instead of the less accurate contour methodology currently employed in the FM rules. A component of OET-69 is the allowance for a de-

minimis level of interference, recognizing that holding a proposed facility to zero calculated new interference places too much weight on interference limiting coverage potential.

CTI urges the Audio Division and the Commission in general to consider ways in which OET-69 methodology can be brought to bear on the matter of FM coverage and interference.

International Considerations

It is believed worth noting that the rule changes proposed herein offer potential benefits to domestic stations as they protect each other but existing protection requirements to foreign stations will not change. This will leave a number of stations, especially those in proximity to the Canadian and Mexican borders, with limited daytime signal improvement capabilities. Since international nighttime skywave protection requirements will remain as they have been for decades, stations that are limited by a foreign protection requirement will likely not be benefited.

What is the Solution to the Problem of Uniform Day and Night Service Area?

The daytime allocation changes proposed herein could give stations with complex directional patterns the ability to reduce null depth and possibly even reduce the number of towers in a directional array. The nighttime allocation changes proposed - most importantly limiting RSS night calculations to 50%, removing adjacent channel stations from the RSS calculation, and deleting protection to Class A station 0.5 mV/m sky wave contours while fully protecting the nighttime 0.5 mV/m daytime groundwave contour - should allow Class D and B stations to gain night service or improved night service with less complicated antenna systems. These are good things, but in many cases these options will still be out of the reach of stations that have international or domestic protections that prevent meaningful 24 hour service.

The FCC has not yet addressed pre sunrise and post sunset operation in this proceeding. A sure road to increased AM viability, and ability to serve the public, would be the ability for more stations to be on the air during morning and afternoon drive times.

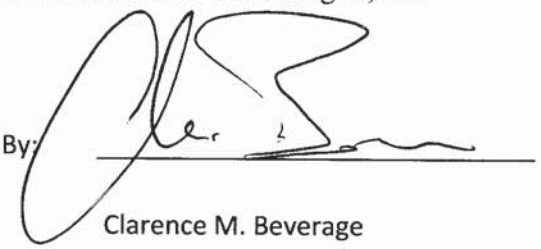
At the end of the day, changes that AM stations can make under the proposed rules changes, along with the greater availability of FM translators, will certainly help AM stations to not only survive but better serve their markets. However, it is CTI's opinion that AM stations will never compete fully with FM stations until they move to a new frequency range in the VHF or UHF band where they can enjoy an essentially uniform signal radius, digital transmission and the ability to transmit some levels on non-aural content. We urge the Commission to consider that need.

Conclusion

We thank the FCC for continuing a proceeding that has, and can continue, to help many AM broadcasters to more effectively serve the public. We do note that there is still more to do as can be seen in the comments and recommendations submitted herein. There are other matters not discussed here such as all digital transmission and possibly reserving space for that service in the expanded band which have been raised previously and hopefully will be fully addressed in the future.

Respectfully submitted,

Communications Technologies, Inc.

By: 

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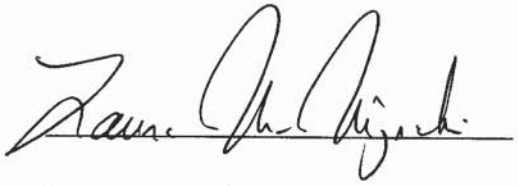

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March 21, 2016